

Foreword

Evidence-Based Surgery



Ronald F. Martin, MD
Consulting Editor

Study your Physics well, and you'll be shown
In not too many pages that your art's good
Is to follow Nature insofar as it can.

—Dante, *The Inferno*

What do we know and how do we know it? This issue of the *Surgical Clinics of North America* by Dr. Jonathan Meakins and his colleagues may address the most important issue that we consider—how is it that we ascertain the truth? The truth, or at least our perception of it, is an elusive concept at best. It becomes even more elusive if one turns to the literature to ascertain it. One merely needs to pick up a journal from 20 or 30 years ago to realize that the amount of material contained within its pages has a wide variability in its persistence of representing the truth.

The evidence-based movement has suggested to us that if we apply rigorously scrutinized data collected in a randomized prospective fashion that we will be able to answer most, if not all, important clinical questions. Furthermore, if we follow the logical conclusion of converting this data into “best practices,” we will eliminate bad outcomes. Although this notion has a sort of visceral appeal, it is probably far from the complete truth. One can certainly make the argument that under like circumstances, highly controlled algorithms and procedures should lend like outcomes. Unfortunately, we as surgeons face some unique challenges in this regard. Frequently, the nature of our profession causes us to deal with some issues that are not highly controllable, including time constraints, varying local referral patterns, diagnostic equipment, patient expectation, and, most notably, ourselves. Try

though we may to deny it, the fact remains that we surgeons are in a competitive business—literally. Money, power, and prestige are at stake.

To borrow a phrase from our mathematical brethren, some problems have an “extreme sensitive dependence on initial conditions.” This, in theory, explains why some problems, such as weather, are notoriously difficult to model accurately. Algorithms are very useful when you already know with a high degree of confidence what is wrong—frequently less so when you do not. This notion may introduce another potential problem with our emphasis on outcomes as a measure of success when we may have an inability to really measure appropriateness of indication. Most Morbidity & Mortality conferences I have had the privilege to attend have yielded more cases for discussion from failure to understand indication than from failure to execute an established “best practice” for the erroneously presumed problem. It would seem that we as surgeons, in particular general surgeons, will be faced with problems that lend themselves well to clinical pathways (eg, screening for colon cancer) and those that do not (eg, acute abdominal pain). The line between the two may shift and blur, but it is unlikely to disappear.

The concept itself of “best practice” has some Orwellian overtones that should give cause for concern under the best of circumstances. Who decides what is best and for whom? The reader of this issue will be privy to a very thoughtful analysis of this particular question. We have to consider that in this query, like so many others in life, where one stands depends upon where one sits. The public thinks (and expects) that we in the health care industry are all working together in pursuit of the greater good. And perhaps we are. Professional societies and organizations may feel that they know what is best as may government organizations, third party payers or advocacy groups. The greater good, though, may be a more nebulous target than we would care to admit. Another problem with labeling something a “best practice” is that it implies that to deviate from this is to offer something less than best, nearly by definition, rather than different from best. I prefer the term “best current practice,” because at least it leaves room for the notion that continued improvement is expected.

Other issues that confound us are the proprietary issues regarding evidence; who owns it, who controls it, how do we disseminate it, how do we correct it? If we view our literature and process of investigation as the “research and development” of our industry, then we have some fundamental questions to address. In any business, research and development is part of a functioning business plan. There are economic laws that govern how it is funded, reimbursed, what percentage of profits can be returned to finance it, and what profit needs to be derived from it to sustain it. Our current system has no such truly cohesive strategy. Nor do we have clear guidance from society as to how much economic and regulatory burden they are willing to assume to achieve such goals. What is clear at present is that the economic position of our health care system in the context of a larger societal picture is in need of revision. This has been highlighted by the recent decision of

General Motors Corporation to downsize its production capacity and employee workforce, largely because of the company's reported inability to continue to support its employee and retiree health care cost. It has been said that "as goes General Motors so goes America." If there is even some truth to that statement, we will need to drastically reconstruct our health care financing structure as part of a national economic plan. This would likely lead to conditions where changes in the cooperation and real-time sharing of financial and information resources between and among "competitors" will take on new meaning.

The current dissemination of information is largely conducted through professional societies, their meetings and publications, and review publications such as this series. Historically, this has been a fairly effective and efficient process, although anyone who has been involved with these entities realizes that certain biases are inherent within the system that are barriers to incorporating and disseminating some evidence. The widely available access of electronic digital communications coupled with the advantage of worldwide instant communication may change this model. With this change we can expect the same occurrences as the print and television media industries have seen with internet-based information services and bloggers. These sites will have varying degrees of adherence to "rules of evidence" and the same (if not better) soapbox as the traditional journals have stood upon. A grass roots movement taking control of providing the framework for investigation and dissemination of information may seem unlikely—and perhaps it is, given some of the aspects of human investigation. But even IBM acknowledged the open-source APACHE project that provides the server software that our cultural infrastructure has come to largely depend upon was better developed by a collection of largely unrelated individuals than the mega-computing company could, or should, provide on its own. There is really no reason that I can see that we should consider ourselves substantially different in the broad strokes—and like IBM, other large professional organizations and societies will have to maintain a delicate balance between vigilant peer review and suppression of creative inquiry and development. First and foremost, we will all need to strive for what best serves the public. That debate, which will need to include the public in a meaningful way, has not yet occurred.

The evidence-based concept of surgery is a beginning and not an end to itself. Without some ability to organize our degree of confidence in the information that we have, we cannot reasonably expect to acquire, filter, absorb, or differentiate the torrent of data that presently flows toward us. The evidence-based rules cannot and will not supplant the need for inquiry, judgment, and personal caring that we as surgeons need to employ every day. We cannot eliminate all variability in surgical care and we cannot all be above average. The logical end point of all this effort is to allow us to bring to bear the full weight of what is available to help the individual patient with whom we are charged with being individually responsible for when he or she

is ill. That has not changed—yet. The surgeon will remain the “transmission” or, if you prefer a more current metaphor, the “interface” between our collective professional wisdom and the patient. It is my hope that the reader of this issue will become better prepared to analyze our product and to critically assess our knowledge.

Ronald F. Martin, MD
Department of Surgery
Marshfield Clinic
1000 North Oak Avenue
Marshfield, WI 54449, USA

E-mail address: martin.ronald@marshfieldclinic.org